

What is claimed is:

1. A laminated ceramic coupler, comprising:

a ceramic block, comprising a plurality of ceramic sheets,
5 with a first and a second transmitting line formed therein;

a first to a fourth grooves, running from a top to a
bottom of at least one surface perpendicular to a lengthwise
direction of the first and the second transmitting line, with
such a depth from the surface as to partially expose both ends
10 of each of the first and the second transmitting line; and

a first to a fourth ports having first electrode parts
formed respectively on the first to the fourth grooves and
connected to the ends of the first and the second transmitting
line, and second electrode parts formed on one surface parallel
15 to the lengthwise direction of the first and the second
transmitting line, with an electrical connection to
corresponding first electrode parts.

2. The laminated ceramic coupler as set forth in claim 1,
20 wherein the ceramic block comprises:

a first ceramic sheet functioning as an upper cover;

a second ceramic sheet, positioned below the first ceramic
sheet, comprising:

a first and a second conducting pattern which are
25 generally parallel to each other and are respectively

connected to the first electrode parts of the first and the second port at their respective one end; and

two via holes formed at the other ends of the first and the second conducting pattern;

5 a plurality of third ceramic sheets, formed in order below the second ceramic sheet, each comprising:

a third and a fourth conducting pattern which are generally parallel to each other and are respectively connected at their respective one end through the via
10 holes of a ceramic sheet immediately above each of the third ceramic sheets to the conducting patterns on the ceramic sheet immediately above each of the third ceramic sheets; and

two via holes formed respectively at the other ends
15 of the third and fourth conducting pattern;

a fourth ceramic sheet, formed below the third ceramic sheets, comprising:

a fifth and a sixth conducting pattern which are generally parallel to each other and are respectively
20 connected at their respective one end through the via holes of a ceramic sheet immediately above the fourth ceramic sheet to the conducting patterns on the ceramic sheet immediately above the fourth ceramic sheet while the other ends being electrically connected respectively to
25 the first electrode parts of the third and the fourth

port; and

a fifth ceramic sheet, formed below the fourth ceramic sheet, having the second electrode parts of the first to the fourth ports on its bottom surface, said second electrode parts
5 being electrically insulated from each other, thereby, the first, the third and the fifth conducting pattern being electrically connected in series to form the first transmitting line while the second, the fourth and the sixth conducting pattern being electrically connected in series to form the
10 second transmitting line.

3. The laminated ceramic coupler as set forth in claim 1, wherein the first to the fourth grooves have a shape of a rectangular parallelepiped.
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4. The laminated ceramic coupler as set forth in claim 1, wherein the first to the fourth grooves have a shape of a semicircular cylinder.

20 5. The laminated ceramic coupler as set forth in claim 1, wherein the first electrode parts of the first to the fourth ports are fabricated by forming the grooves at predetermined positions in the plurality of ceramic sheets of the ceramic block, filling an electrically conducting material in the
25 grooves, and laminating the plurality of ceramic sheets.

6. The laminated ceramic coupler as set forth in claim 1,
wherein the first to the fourth grooves, and the first
electrode parts of the first to the fourth ports are fabricated
5 by laminating the plurality of ceramic sheets to give the
ceramic block, mechanically processing the ceramic block at
four points on at least one surface perpendicular to the
lengthwise direction of the first and the second transmitting
line to form the first to the fourth grooves, and filling an
10 electrically conducting material in the first to the fourth
grooves.

7. The laminated ceramic coupler as set forth in claim 2,
wherein each of the first to the sixth conducting patterns is a
15 spiral conducting pattern taking at least one turn.